

Zero Retries issue 0026 2021-12-31

Advanced Amateur Radio - Data Communications; Space; Microwave... the fun stuff! The Universal Purpose of Ham Radio is to have fun messing around with radios. - Bob Witte K0NR; Amateur Radio is literally having a license to experiment with radio technology. - Steve Stroh N8GNJ; Ultimately, amateur radio must prove that it is useful for society. - Dr. Karl Meinzer DJ4ZC; We are confronted by insurmountable opportunities! - Pogo; Nothing great has ever been accomplished without irrational exuberance - Tom Evslin; Irrational exuberance is pretty much the business model of Zero Retries Newsletter - Steve Stroh N8GNJ.

Steve Stroh N8GNJ, Editor

Jack Stroh, Late Night Assistant Editor

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Happy New Year, Zero Retries Subscribers!

Request to Send

Countdown to [Hamvention](#) 2022 - May 20-22, in Xenia, Ohio - 20 weeks...

One of the gifts I gave my daughter this Christmas was a set of battery-powered LED candles. I had one of those “brave new world” moments when I was explaining to her that I gave these same candles to my wife *last* Christmas and they were *still* going, lighting up every night. These candles operate on a AA battery or two, turn on for six hours, then stay off for eighteen hours. They work reliably enough that it’s almost certain that they’re being driven by a very small, efficient microcontroller. Then I made one of those statements that one never imagines they would ever say, until they do: “So, someone, somewhere, wrote *software... for... a... candle!*”.

As I begin this issue on Saturday 2021-12-25 and Sunday 2021-12-26, Whatcom County, Washington is on the leading edge of a significant winter storm for Western Washington. Winds are 30+ MPH from the North (Frasier River Valley, British Columbia) that periodically rattles the house and shop. There are some power outages in the area, and my house experienced a frozen pipe in one corner that may or may not be serious - to be determined. Our house and shop / office are staying warm. Thus, thoughts turn to emergency power and emergency communications - how bad *would* it be if the power went off?. The “shack” has a backup power system, but I need to do a better job for the house to keep the water well and furnace online for the next big one that might not be so benign for us.

Update 1 - While the snow and low temps remained, everything thawed without incident - PEX plumbing rocks! Update 2 - the shack’s big battery is at least five, perhaps ten years old (forgot to put a date tag on it) and under 50w transmit load, the voltage is sagging enough for the low voltage alarm to go off. It probably doesn’t help that it’s sitting on a cold cement floor. Time to replace it this Spring.

Zero Retries Lookback on 2021 - Part 1

By the time I was finished, the Zero Retries Lookback on 2021 ended up being too long to email, so it’s now a two-parter. Zero Retries 0027, next week, will be Zero Retries Lookback on 2021 Part 2.

The primary Zero Retries highlight of 2021 for me was *shipping* Zero Retries 0000 on 2021-07-09 to 30+ brave subscribers - thanks family and friends! Writing Zero Retries was a long-contemplated dream of mine. This pair of quotes was present in Zero Retries 0000 and “remains resonant”:

Nothing great has ever been accomplished without irrational exuberance.

Tom Evslin

Irrational exuberance is pretty much the business model of Zero Retries Newsletter.

Steve Stroh N8GNJ

From some perspectives, it’s a nutty endeavor to attempt to write a weekly newsletter about arcane subject(s) with no profit motive. For me, Zero Retries is kind of “Deja Vu All Over Again”. My writing career began with being a subscriber to Boardwatch Magazine which was then the bible of the emerging Internet Service Provider industry. I devoured Boardwatch

Magazine, but chafed that it didn't cover an interesting corner of the ISP industry where some ISPs were providing Internet Access via (Part 15 - license exempt) wireless systems. I naively wrote to Boardwatch (yeah, literally wrote, on paper) to suggest that they start covering Wireless ISPs, and if they couldn't find someone, I'd be willing to try writing a column. To my amazement, I got a phone call from a Boardwatch editor, and the call concluded with the commandment "Your column is due in two weeks." (Funny family story about that call - it was preceded by an earlier call when I wasn't home, which my wife received. The editor politely introduced himself to my wife and my wife said "Boardwatch Magazine? Oh yeah, I know it well - whenever it comes in the mail I lose my husband for the entire evening.") Ironically that column led to another publisher creating *Broadband Wireless Business Magazine*, which I wrote a *lot* for.

The moral of that story is that if I had been able to find the material I was interested in - Boardwatch with coverage of Wireless ISPs, I never would have tried to write about it. I just wanted to learn more about it.

The same thing applies here to Zero Retries. If I could just read the material I'm interested in about Advanced Amateur Radio, if someone *else* published something like Zero Retries, I'd happily subscribe to it. There *used* to be - but Packet Radio Magazine, Gateway, and 73 are all gone now. So... once more into the breach.

I provided some backstory about finally "shipping" Zero Retries in the Request to Send editorial in Zero Retries 0003:

In the years [decade... 🤔] I've been imagining Zero Retries, creating it had always felt like a solid goal in my mind, and I felt like I was steadily working towards launching Zero Retries "soon". I had written ample content, but there were always more things on the to-do list that "should get done before I launch". Sometime this past June, I casually read an article by [Kevin Kelly](#) called [99 Additional Bits of Unsolicited Advice](#). I'm confident you'll find much wisdom in it, as I did. But as I read through the various bits of unsolicited advice, this one "bit" was really profound:

If your goal does not have a schedule, it is a dream.

There are moments when you encounter things that sear your soul, and that one seemingly innocuous bit of unsolicited advice seared mine. Just copying and pasting it into this story, it still leaps out at me. The moment I read it, it was instantly clear to me that I hadn't yet launched Zero Retries because **I didn't have a schedule!** I had not committed to actually launching Zero Retries. You're reading Zero Retries now because in that moment, I realized that I really didn't want Zero Retries to be merely a dream.

In that same Request to Send, I explained the story of why Zero Retries publishes on Fridays at 15:30 Pacific.

I'm proud that Zero Retries has published every Friday since then, only twice missing my self-imposed publication time of 15:30 Pacific. What follows are some highlights of 2021. I really should do an index, and a canonical list of links (all backed up on the Wayback Machine of the Internet Archive), but before I launch into that labor intensive task, I'll try to find a more

automated solution... or someone with more energy than I that works for a reasonable rate.

200+ Subscribers! As of Zero Retries 0025, there are 200+ subscribers to Zero Retries. As I was envisioning Zero Retries prior to launch, 200 was my fantasy subscriber threshold - if there were 200 subscribers that wanted to get Zero Retries every week, I'm doing something right (enough). With that milestone, I'll likely not mention subscriber numbers until another major threshold is reached.

ARDC GAC For most of 2021, I was a member of the ARDC Grants Advisory Committee (GAC), and that consumed a fair amount of time to research grants proposals, provide meaningful feedback on the grant proposals, and attend biweekly meetings of the GAC. In my opinion, the GAC did good work advising the ARDC Board of Directors on the many grants proposals that ARDC received. 2021 was the first year that ARDC was fully staffed on its board, its staff, its Technical Advisory Committee (TAC) and its Grants Advisory Committee (GAC). It's inspiring to think of what ARDC will be able to accomplish in 2022 starting the year fully staffed, with ample experience and processes, and larger Technical Advisory Committee (TAC) and Grants Advisory Committee (GAC).

The reason I mention ARDC so extensively here in Zero Retries, beginning in Zero Retries 0000, is that ARDC has now invested a lot of money into Amateur Radio, scholarships, academic research, and related fields. I don't think it's overstating the situation to state that ARDC's grants to Amateur Radio are *transformational*. As a philanthropic institution, ARDC and its endowment and grants are "small". But within the comparatively small community that is Amateur Radio worldwide, there hasn't been anything like ARDC's millions of dollars in grants. It's not hyperbole to say that ARDC grants re-energized a number of Amateur Radio clubs, helped create new Amateur Radio infrastructure, and funded many experiments in Amateur Radio. Look for ARDC's 2021 Report in early 2022 - I think you will be impressed with how much ARDC accomplished for Amateur Radio in 2021.

ARDC Grants Three ARDC grants that I'm particularly proud of participating in were:

- Helping to [save the "W1MX \(MIT\) Big Dish"](#) in May (I [gushed a bit](#) about this)
- A [five-year grant](#) to Amateur Radio on the International Space Station (ARISS) in October to create new capabilities for ARISS.
- A grant to German Deutscher Amateur Radio Club e.V. (DARC) to help [expand European HAMNET](#).

A number of grant proposals were received just prior to ARDC's year-end cutoff in November, and most of those were processed by end of year, but have not yet been posted to ARDC's [Grants summary page](#) (but they will).

Whatcom County, Washington / Digital Group / Amateur Radio In Zero Retries I talk a lot about the community of data communications enthusiasts here in Whatcom County, Washington and by extension, communities in Amateur Radio.

- **Survival of Amateur Radio** - ZR 0000.
 - **Amateur Radio Digital Water Holes (and Building Community)** - ZR 0001.
 - **fsq is a Gateway Drug for Building a Radio Community** - ZR 0003.
 - **Thoughts on Community** - ZR 0015.
 - **Some Thoughts on Technological Tribalism** - ZR 0019.
 - **Good Interview with Michelle Thompson W5NYV** - ZR 0025.
 - **Whatcom County Data Over Repeater Weekly Net** - ZR 0025.
-

Presentations, etc. that I did in 2021:

- **Fundamentals of Wireless Communications Presentation** on 2021-04-06 talking to Technology Alliance Group Northwest (TAGNW)'s [Information Technology group](#). This one predates the debut of Zero Retries.
 - **Broadband Access Guest Appearance** on 2021-04-26 talking to co-hosts Jon Lebrowsky and Scoop Sweeney for [Plutopia News Network](#). I talked a lot about Starlink. This one predates the debut of Zero Retries.
 - **Advanced Data Modes for Amateur Radio Presentation** on 2021-07-09 to the [San Juan County Amateur Radio Society](#) - ZR 0001.
 - **“Show and Tell”** - Amateur Radio exhibit at the first [Bellingham Maker Faire](#) at the Bellingham Makerspace on 2021-10-09. I described the experience in Zero Retries 0013 and Zero Retries 0014, including my conclusions / lessons learned.
As of 2021-12-15, I'm no longer associated with the Bellingham Makerspace and the Bellingham Makerspace Amateur Radio Group (and by extension, the Bellingham Maker Faire, at least while it's sponsored by Bellingham Makerspace).
 - **FLOSS (Free Libre Open Source Software) Weekly Guest Appearance** on 2021-12-10 on **Open Source and Amateur Radio** - ZR 0022 and ZR 0023. This appearance caused a small surge in Zero Retries subscribers.
-

Hardware Confessing to a bit of a hardware bias for Advanced Amateur Radio, especially “data” radios, I ~~probably~~ definitely wrote more about radio and computer hardware than software. (“Data” radio used here is one that has “flat audio” input / output so the full range of audio frequencies can be transmitted without the distortion introduced by pre-emphasis [microphone] and de-emphasis [speaker] stages). I *shouldn't* have such a bias now that radios of the ~~future~~ *present* are largely based on Floating Point Gate Arrays (FPGAs), microcontrollers, microprocessors, and other software-defined hardware. The era of “pure hardware” is almost entirely at an end.

- **Packet Radio Hardware In 2021** - ZR 0002.

- **New Paradigm Network Amateur Radios** - This series was a real labor of love - **Part 1** - ZR 0007, **Part 2** - ZR 0008, **Part 3** - ZR 0009, and (defacto) **Part 4** - ZR 0010. *I think there were some good ideas presented in that series.*
- **Multipurpose Remote Nodes** - ZR 0010.
- **Kraken SDR** - ZR 0014 and ZR 0016.
- **Prototype Pi Teensy Micro v1.1 TNC** - ZR 0016.
- **Masters Communications Model DRA-MIX-MUX** - ZR 0016.
- **New Yaesu FTM-6000R “Data” Radio** - ZR 0017.
- **HYS TC-8900R - 29 MHz, 50 MHz, 144 MHz, and 440 MHz “Data” Radio** - ZR 0018.
- **TYT TH-9000D** - This inexpensive radio can apparently be adapted for data use - ZR 0018 and ZR 0019.
- **Crowd Supply** is helping create new radio devices, including some for Amateur Radio - ZR 0024.
- **Icom’s SHF Project** (apparently still in the concept stage) - ZR 0024.
- **ÖVSV’s 52 / 144 / 433 MHz Software Defined “transceiver”** - ZR 0024.

Software Almost all of the above “hardware” have a software component. Indeed, software is [continuing to eat the world](#).

- **Dire Wolf Implements new Forward Error Correction Technique** - ZR 0016.
- **Overview of DragonOS - Linux ISO with SDR Programs** - ZR 0016.
- **For a 1 kbps Link on a 15 km Path, (Mostly) All You Need is Software** - ZR 0017.

To be continued in Zero Retries 0027 to be published 2022-01-07.

Feedback Loop

- (Empty buffer)
-

Contributors This Issue

- My ongoing Thanks to Tina Stroh KD7WSF for, well, *everything*, Bill Vodall W7NWP

as *Zero Retries Instigator in Chief*, and Larry Gadallah NM7A for his long term encouragement about Zero Retries.

- My ongoing Thanks to pseudostaffers [Dan Romanchik KB6NU](#), [Jeff Davis KE9V](#), and [Steve Lampereur KB9MWR](#) for continuing to spot, and write about “Zero Retries Interesting” type items, on their respective blogs, from Amateur Radio and beyond, that I don’t spot on my own.
 - For those that get the reference, [Southgate Amateur Radio News](#) is, to me, the “[Slashdot](#)” of Amateur Radio, and I follow them both on Twitter and their RSS feed. They consistently surface “Zero Retries Interesting” stories.
-

Join the *Fun* on Amateur Radio

If you’re not yet licensed as an Amateur Radio Operator, and would like to join the fun by *literally having a license to experiment with radio technology*, here are some pointers:

- **Ham Radio for Dummies** by Ward Silver N0AX is a great overview of Amateur Radio. N0AX is a gifted writer and HRFD is now in its [4th edition](#).
- My two favorite **YouTube** channels for a good overview of Amateur Radio are [AmateurLogic.TV](#). and [Ham Nation](#) (part of Ham Radio Crash Course). These folks just seem to have so much fun!
- Dan Romanchik KB6NU offers a free **No-Nonsense Study Guide** for the [Technician test](#) (PDF).
- [HamExam.org Amateur Radio Practice Exams](#) offers good **Flash Card and Practice Exams**.
- When you’re ready to take an **Amateur Radio examination** (Tech, General, or Extra), W1MX - The MIT Amateur Radio Society offers [remote exams](#), free for students and youngsters. *There are apparently [many other remote exam options](#).*

Bonus - with an Amateur Radio license, you’ll be [more attractive on dates](#) 😊

Closing the Channel

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More bits from Steve Stroh N8GNJ:

- [SuperPacket blog](#) - *Discussing new generations of Amateur Radio Data Communications - beyond Packet Radio (a precursor to Zero Retries)*
- [N8GNJ blog](#) - *Amateur Radio Station N8GNJ and the mad science experiments at N8GNJ Labs - Bellingham, Washington, USA*

Thanks for reading!

Steve Stroh N8GNJ

Bellingham, Washington, USA

2021-12-31

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Below is a much more complete “footer” that has evolved over 30+ issues of ZR.

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- [Radio Amateur Training Planning and Activities Committee \(RATPAC\)](#) offers weekly presentations on general Amateur Radio topics (Wednesdays) and emergency communications in Amateur Radio (Thursdays).
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Closing the Channel

- In its mission to grow Amateur Radio and make it more relevant to society in the 2020s and beyond, Zero Retries is published via email and web, and is available to anyone at no cost. Zero Retries is proud *not to participate* in the Amateur Radio Publishing Industrial Complex!
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Thanks for reading!

Steve Stroh N8GNJ (He / Him)

These bits were handcrafted in beautiful Bellingham, Washington, USA

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